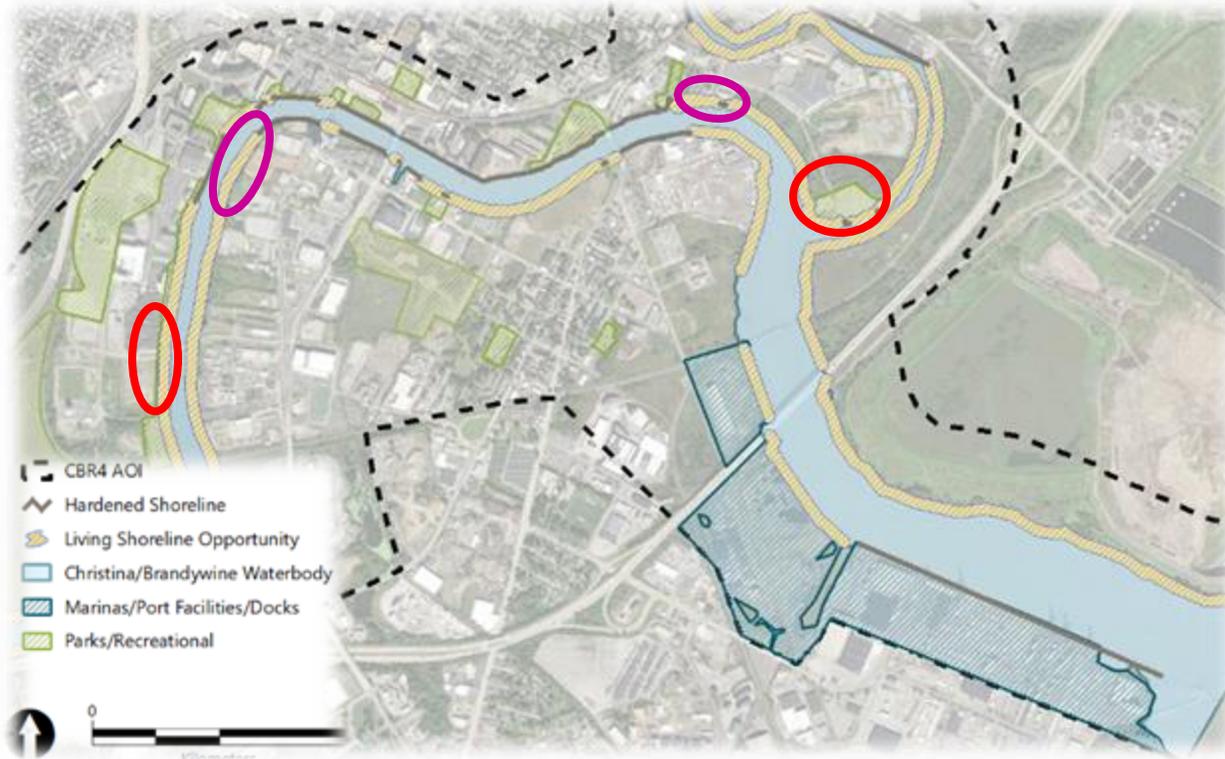


# Opportunity: Restoring Shorelines



Shorelines where the river meets the land can support a wide array of plants, animals, and fish and act as natural water filters if kept and managed in a natural way.

There are over 20 miles of shoreline along the Christina and Brandywine Rivers in the project area. Where these shorelines have not been hardened with bulkheads or other structures, restoring living shorelines can provide natural habitat and help prevent erosion and flooding. A gradually sloping natural shoreline can also offer opportunities for people to view and interact with these natural areas and the water's edge.

## Which CBR4 goals does this opportunity meet?

- |  |   |  |
|--|---|--|
| <input checked="" type="checkbox"/> Restoration and Protection of Wetlands       | <input checked="" type="checkbox"/> Restoration and Protection of Shorelines        | <input checked="" type="checkbox"/> Increase Community Resilience      |
| <input checked="" type="checkbox"/> Restoration and Protection of Riparian Areas | <input checked="" type="checkbox"/> Remediation of Contaminants                     | <input checked="" type="checkbox"/> Improve Community Access to Rivers |
|  | <input checked="" type="checkbox"/> Restoration and Protection of Adjacent Habitats |  |

# Restoring Shorelines: 7<sup>th</sup> St. Peninsula



**Summary:** Skate park and old boat ramp with sites of ecological interest

**Existing Conditions:** Characteristic mudflats with varying levels of protection that may be accreting, wetland forest with fringing *Phragmites*



# Restoring Shorelines: 7<sup>th</sup> St. Peninsula

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**Figure 2**  
**7th Street Park - Plan View**  
 Restoration Concept Plans  
 Christina Brandywine River Remediation  
 Restoration Resilience (CBR4) Project  
 Wilmington, Delaware

# Restoring Shorelines: 7<sup>th</sup> St. Peninsula

## Project Features:

### 1. Wetland forest understory restoration

- Control invasive *Phragmites*
- Plant native vegetation
- Trail alignment



**Figure 2**  
**7th Street Park - Plan View**  
Restoration Concept Plans  
Christina Brandywine River Remediation  
Restoration Resilience (CBR4) Project  
Wilmington, Delaware

# Restoring Shorelines: 7<sup>th</sup> St. Peninsula

## Project Features:

1. Wetland forest understory restoration
2. **Armored Intertidal living shoreline**
  - Increase tidal exchange
  - Vegetation plantings and mussel installations



# Restoring Shorelines: 7<sup>th</sup> St. Peninsula

## Project Features:

1. Wetland forest understory restoration
2. Armored Intertidal living shoreline
3. Intertidal living shoreline
  - Upstream protection
  - Plantings or structures



# Restoring Shorelines: 7<sup>th</sup> St. Peninsula

<b><u>Restoration</u></b>	Improved tidal exchange, increased habitat diversity, and potential mussel installations will restore key intertidal ecosystem characteristics and functions
<b><u>Remediation</u></b>	Sediment evaluation needed prior to redistribution; consider borrow material sources.
<b><u>Resilience</u></b>	Improving stability at high-energy confluence, potential flood mitigation
<b>*Public Access</b>	Public access will be integrated into the design to encourage more positive interaction with the site



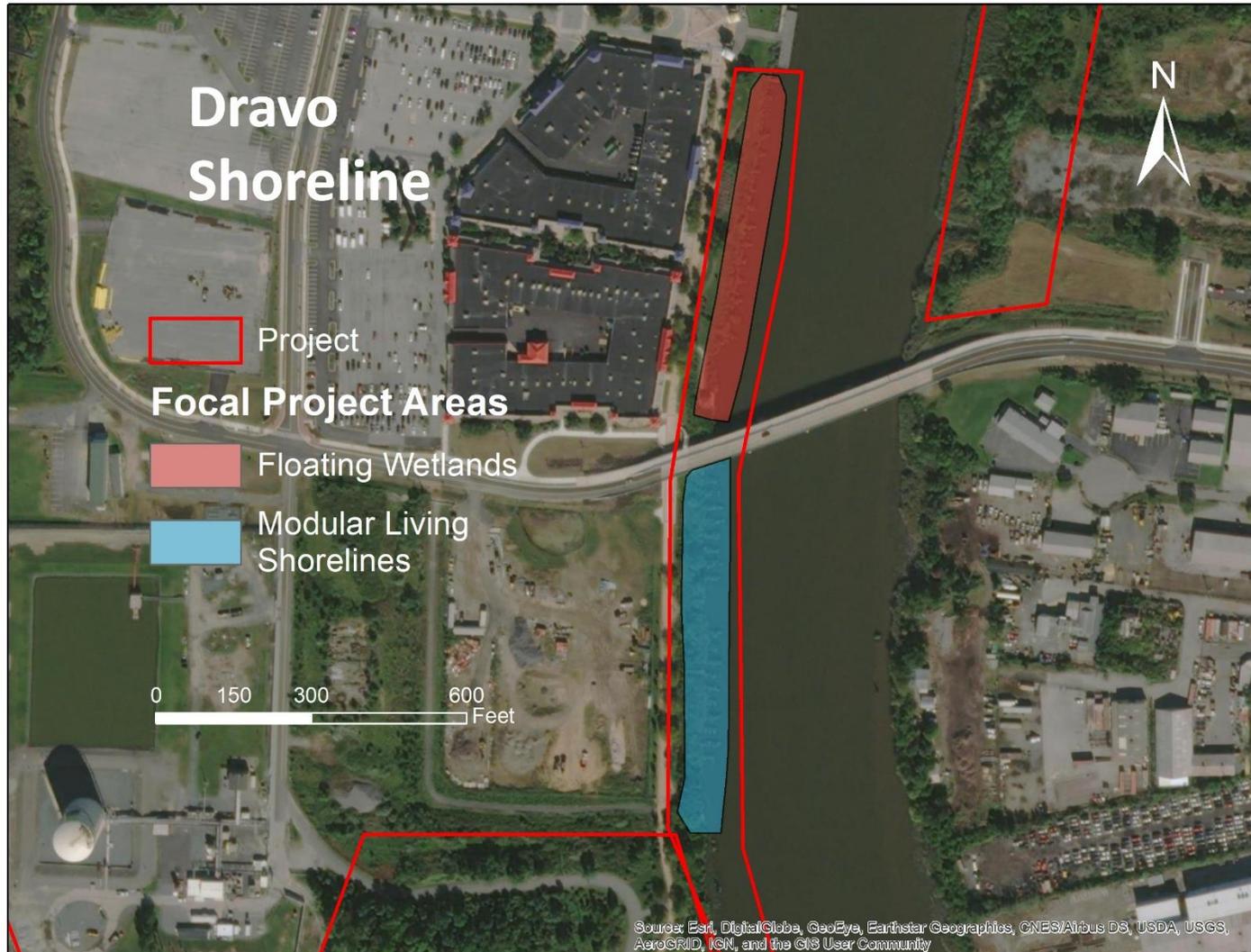
## *Signature Species*

Eastern Elliptio



Eastern Elliptio is a freshwater mussel. It filters and improves water quality and serves as food for other species like fish, raccoons, otters, and birds.

# Restoring Shorelines: Dravo Shoreline



**Summary:** Stretch of historic pilings

**Existing Conditions:**

- Vegetation growing atop pilings
- North end rip-rapped and steeper
- South end characterized by softer, but stable sediment and gentler slope



# Restoring Shorelines: Dravo Shoreline

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# Restoring Shorelines: Dravo Shoreline

## Project Features:

### 1. Management of existing vegetation

- Control invasive species
- Bolster native plant populations



# Restoring Shorelines: Dravo Shoreline

## Project Features:

1. Management of existing vegetation
2. **Wetland habitat uplift**
  - Northern half: experimental floating wetlands



# Restoring Shorelines: Dravo Shoreline

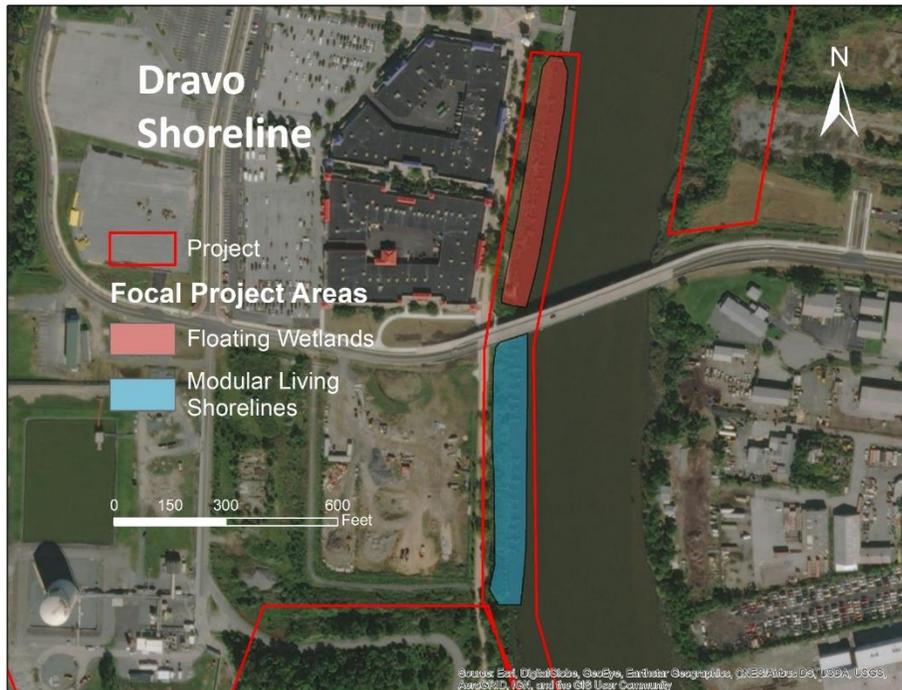
## Project Features:

1. Management of existing vegetation
2. **Wetland habitat uplift**
  - Northern half: experimental floating wetlands
  - Southern half: stabilized, modular living shoreline pockets



# Restoring Shorelines: Dravo Shoreline

<b><u>R</u>estoration</b>	Management of invasives and maintenance of important native plant communities will benefit pollinators and aquatic species
<b><u>R</u>emediation</b>	Less sediment disturbance necessary, but evaluations will still take place
<b><u>R</u>esilience</b>	Floating wetlands and pocket living shorelines will contribute to cleaner, healthier waters
<b>*Public Access</b>	Offers great opportunity to pilot novel floating wetland and modular living shoreline concepts at a site that experiences considerable foot traffic.



## *Signature Species*

Juvenile Striped Bass



Young striped bass live and forage in estuarine environments before they grow large enough to migrate; they receive protection and abundant food from complex vegetated habitats